PRELIMINARY INSTRUCTION MANUAL

Model SCP-130C

RAM+ MEMORY CARD

FOR THE IBM PERSONAL COMPUTER

Available with 64K, 128K, 192K, or 256K of memory.

SEATTLE COMPUTER
1114 Industry Dr. Seattle WA 98188 206/575-1830

INSTALLATION OF THE RAM+ INTO YOUR IBM PERSONAL COMPUTER

Step 1. Open the System Unit.

Be sure the System Unit is off and remove its power cord from the back panel. Clear off the space on top and in front of the System Unit. Two screws must be removed from the back panel, one each in the lower left and lower right corners. Once removed, slide the cover of the System Unit all the way forward until it clears the base, then set the cover aside.

Step 2. Get your Personal Computer ready.

You MUST have the entire complement of 64K bytes of memory installed on the System Board before you can add RAM+. If you're not sure, look at the front left area of the System Board for rows of memory components. If you see a row of 8 empty sockets, you are not yet ready to install RAM+. You need one or more expansion memory kits, available from retailers of the IBM Personal Computer and other vendors as well. Seattle Computer does NOT sell the needed kit.

Locate the system configuration switches on the System Board. They are near the middle, between the power supply and system expansion slots, in two "DIP"s of 8 small switches each. The DIP switch on the left is known as Switch 1, and the one next to the power supply is Switch 2. Since you have 64K bytes of memory installed on the System Board, positions 3 and 4 of Switch 1 should both be OFF, that is, pushed toward the left.

Add up how much memory you will have after installing RAM+, including the 64K bytes on the System Board and any additional memory expansion boards you will be using. This total should always be a multiple of 32K. Now use the table below to set positions 1 through 4 of Switch 2 (the DIP switch on the right). Pushing the switch to the left is OFF, to the right is ON.

Total Memory	Switch 2			
	1	2	3	4
64K	on	on	on	on
96K	off	on	on	on
128K	on	off	on	on
160K	off	off	on	on
192K	on	on	off	on
224K	off	on	off	on
256K	on	off	off	on
288K	off	off	off	on
320K	on	on	on	off
352K	off	on	on	off
384K	on	off	on	off
416K	off	off	on	off

(Table continued on next page)

448K	on	on	off	off
480K	off	on	off	off
512K	on	off	off	off
544K	off	off	off	off
more than 544K	off	off	off	off

Step 3. Get the RAM+ ready.

The RAM+ has a DIP switch which must be set according to how much memory you have BEFORE the RAM+ is installed. Use the table below to set positions 5 through 8 of the DIP switch. Note that these positions are marked on the RAM+ board just above the switch with the designations "A19", "A18", etc. These designations are also used in the table:

amount of memory already in machine (DO NOT COUNT MEMORY ON RAM+ YOU ARE ADDING)	4 A19	5 A18	6 A17	7 A16	8 A15	hexadecimal memory address
64K	off	off	off	on	off	10000
96K	off	off	off	on	on	18000
128K	off	off	on	off	off	20000
160K	off	off	on	off	on	28000
192K	off	off	on	on	off	30000
224K	off	off	on	on	on	38000
256K	off	on	off	off	off	40000
288K	off	on	off	off	on	48000
320K	off	on	off	on	off	50000
352K	off	on	off	on	on	58000
384K	off	on	on	off	off	60000
416K	off	on	on	off	on	68000
448K	off	on	on	on	off	70000
480K	off	on	on	on	on	78000
512K	on	off	off	off	off	80000
544K	on	off	off	off	on	88000

If you already have an IBM Asynchronous Communications Adaptor, another RAM+, or an equivalent serial communications card from another manufacturer, you will want to configure this RAM+ as COM2 rather than COM1. There are two blue jumpers on the RAM+ board that must be changed to do this. One is a little to the left of the DIP switch, labeled PORT below it. Pull off the jumper, which will be covering the middle and right pins of a three-pin strip, and replace it so it goes over the middle and left pins of the strip. The board is marked with "COM1" and "COM2" so you'll know if the jumper is toward the left it's set for COM2 and if it toward the right it's set for COM1.

A second change is necessary to complete the configuration as COM2. Find a blue jumper near the bottom of bottom of the board, just above the gold-plated connector fingers, labeled IRQ. This jumper will be covering the middle and right pins of a three-pin strip, and should be moved over so it covers the middle and left pins. Note that both the PORT and IRQ jumpers must always be on the same side of their respective three-pin strips: on the right

for COM1, and on the left for COM2.

There are other options that can be set on the RAM+, but these are set at the factory in their "normal" position. If you wish, you may refer to the next section of this manual for a description of these additional options.

Step 4. Install the RAM+.

Choose any empty I/O expansion slot and remove the screw holding down its back cover plate. Save the screw, but discard or stow away the blank plate. Plug the RAM+ into the slot, being careful to get it fully seated in the socket. When properly installed, the metal bracket will fit closely to the back panel and the hole in the top of the bracket will line up with the hole beneath. Re-install the screw.

Step 5. Ready to close, doctor.

Slide the cover of the System Unit back on, and re-install the two screws that hold it in place. Re-connect the power cord and any other connections that were removed during the operation.

Step 6. Test it out.

Turn on your computer and video display, insert a DOS disk in drive A, and wait for your computer to start up. During the start-up process, the computer automatically tests all of your memory. Since you now have much more memory than before, you can expect to wait a little longer before you're ready to go. For example, if you add 256K bytes to a system with 64K, the start-up time will increase from 15 seconds to 50 seconds.

Once you get the "A>" prompt, enter the CHKDSK command. The CHKDSK report will include a line saying "xxxxxx bytes total memory". To find out what the xxxxxx should be, multiply your total amount of memory in K bytes by 1024. For example, if you add 128K to a 64K system: 64K + 128K = 192K total memory; 192K * 1024 = 196608 bytes.

If any of this does not come out right, turn off all the power and re-check the settings of the DIP switches on both the System Board and the RAM+.

SELECTION OF RAM+ OPTIONS

EXPANDING YOUR RAM+

If your RAM+ has less than 256K bytes of memory, you may expand it 64K bytes at a time up to its 256K byte limit. Seattle Computer has made expansion kits available to your local dealer for this purpose. Each kit consists of nine memory components ("chips") which are plugged into one column of empty sockets on the RAM+ board.

The expansion kit is installed in the right-most empty column. For example, if you are expanding a 64K RAM+, the right-most column of the "memory array" will already be filled; the expansion memory chips would be installed in the column immediately to the left of these. Memory chips are very sensitive to static electricity and should be handled as little as possible. Each must be oriented so that the notch or dot which denotes pin 1 is toward the left. This orientation is critical since any chips installed incorrectly WILL BE DESTROYED INSTANTLY when the computer is turned on.

Once installation of the expansion kit is complete, follow the instructions under MEMORY SIZE below to adjust the RAM+ to its new memory capacity. Then review the installation procedures, particularly regarding the DIP switch settings on both the RAM+ and the Personal Computer's System Board. These settings will be different after installation of an expansion kit.

MEMORY SIZE

The RAM+ is capable of be configured for 0, 64K, 128K, 192K, or 256K bytes of memory. Each of these amounts corresponds to 0, 1, 2, 3, or 4 columns of nine memory chips installed, repectively. If you add more memory chips to a board with less than 256K, positions 1, 2, and 3 of the RAM+ DIP switch will have to be changed. Note that these positions are marked on the RAM+ board just above the switch with the designations "S1", "S0", and "E". These designations are also used in the following table:

Number of columns of memory chips	Size of RAM+ board	S1 1	S0 2	E 3
0	0	off	off	off
1	64K	off	off	on
2	128K	off	on	on
3	192K	on	off	on
4	256K	on	on	on

MEMORY ADDRESS

The installation procedures include a table of switch settings and their corresponding memory address. The board is also marked so that a person familiar with binary addressing should be able to set any desired address.

On the RAM+ board directly above DIP switch positions 4 - 8 are marked "A19", "A18", "A17", "A16", and "A15". These designations correspond to address bits of the IBM Personal Computer's 8088 CPU. Turning a DIP switch position ON will require a ONE in that address bit; turning a switch position OFF will require a ZERO.

PARITY ERROR

"Parity" is a means by which it is possible to detect that an error has occurred while reading previously stored data. Normally when a parity error occurs, it is immediately reported to the computer which will take some action. The normal action for the IBM Personal Computer is to print "Parity Check" on the screen and halt. This mode of operation is selected by placing the PARITY ERROR REPORT jumper in the "ON" position (report errors).

It is also possible for the RAM+ to suppress the reporting of parity errors to the computer. This is done by placing the PARITY ERROR REPORT jumper in the "OFF" position. This may be necessary if a parity error occurs consistently and a memory test is going to be used to locate the offending memory chip.

There are four red lights on the RAM+ board, each of which corresponds to one column of memory chips (the left light to the left column, etc.). Whenever a parity error occurs, the light corresponding to the column which had the error will light up and stay lit, which can be a great aid in locating the source of the error. The action of the lights is completely independent of the setting of the PARITY ERROR REPORT jumper.

SERIAL PORT

Three jumpers allow the serial port to be configured as COM1, as COM2, or to be disabled completely. To select configuration as COM1, the PORT and IRQ jumpers must both be toward the right, set to "COM1". To select COM2, move the jumpers toward the left, set to "COM2". For the serial port to operate the SERIAL PORT jumper must be in the "ON" position; to disable the serial port put this jumper in the "OFF" position.

RAM+ LIMITED WARRANTY

Seattle Computer Products, Inc. (SCP) warrants this product to be in good working order when used in the IBM Personal Computer for a period of one year from the date of purchase from SCP or an authorized SCP dealer. This product is not warranted for any use except in the IBM Personal Computer. Should the product fail to be in good working order at any time during this one-year warranty period, SCP will, at its option, repair or replace the unit at no additional charge except as set fourth below. Repair parts and replacement units will be furnished on an exchange basis and will either be reconditioned or new. All replaced parts and products become the property of SCP. This limited warranty does not include service to repair damage to the product resulting from accident, disaster, misuse, abuse, or non-SCP modification of the product.

Limited Warranty service may be obtained by delivering the product during the one-year warranty period to the authorized SCP dealer where the product was purchased or to the SCP factory and providing proof of purchase date. If the product is delivered by mail or other common carrier for warranty work, you agree to insure the product or assume the risk of loss or damage in transit, to prepay shipping charges to the warranty service location and to use the original shipping container or equivalent for product protection during shipping. Factory warranty service is available at SCP, 1114 Industry Drive, Seattle, Washington, 98188, with a normal 2-3 day factory turn-around time.

ALL EXPRESS AND IMPLIED WARRANTIES FOR THIS PRODUCT INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO A PERIOD OF ONE YEAR FROM THE DATE OF PURCHASE, AND NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THIS PERIOD. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

IF THIS PRODUCT IS NOT IN GOOD WORKING ORDER AS WARRANTED ABOVE, YOUR SOLE REMEDY SHALL BE REPAIR OR REPLACEMENT AS PROVIDED ABOVE. IN NO EVENT WILL SCP BE LIABLE TO YOU FOR ANY DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF OR INABILITY TO USE SUCH PRODUCT, EVEN IF SCP OR AN AUTHORIZED SCP DEALER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY OTHER PARTY.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR CONSUMER PRODUCTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.